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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Paper No. 22

Application Number: 09/857,382
Filing Date: July 23, 2001
Appellant(s): FUJIMOTO ET AL.

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GROUP 1700

Joseph Carrier
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 8/1/2003.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is correct.

(7) Grouping of Claims

The appellant's statement in the brief that the claims do not stand or fall together is not agreed with because the claims are not argued separately.

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

5,854,708	KOMATSU	12-1998
5,605,609	ANDO	2-1997
6,027,766	GREENBURG	2-2000

(10) Grounds of Rejection

The following grounds of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 3-7, 9-10 and 12-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 6,379,776 to Tada et al. (hereinafter referred to as Tada) in view of US Patent No. 5,854,708 to Komatsu et al. (hereinafter referred to as Komatsu).

Regarding claims 1, 3-7, 9-10 and 12-20, Tada discloses a hydrophilic member comprising a photocatalyst layer formed on a surface of a substrate and an overcoat layer comprising silicon oxide formed on the surface of the photocatalyst layer (column 2, lines 16-32 and column 10, lines 3-17). Tada discloses that the mean surface roughness of the top surface is within a range of 1.5 to 80 nm (column 13, lines 11-31). Tada discloses that the photocatalyst layer may comprise TiO_2 (column 2, lines 48-54), but does not disclose the use of SnO_2 as the photocatalyst layer. Komatsu discloses that a photocatalyst layer may comprise TiO_2 or SnO_2 (column 2, lines 40-44). It would have been obvious to one having ordinary skill in the art at the

time the invention was made to use SnO_2 as the photocatalyst layer of Tada, because it is functionally equivalent to TiO_2, because both materials function as photocatalysts.

Regarding claims 3 and 14, Tada discloses that the mean surface roughness of the photocatalyst layer is within a range of 1.5 to 80 nm (column 2, lines 16-22).

Regarding claims 4 and 15-16, Tada discloses that the mean spacing of the irregularities of the top surface of the overcoat layer is within a range of 4 to 300 nm (column 13, lines 11-31).

Regarding claims 5 and 17-19, Tada discloses that the photocatalyst layer has a thickness within a range of 10 to 500 nm (column 3, lines 63-67 and column 4, lines 1-6).

Regarding claims 6 and 20, Tada does not disclose a specific thickness range for the SiO_2 overcoat layer, but it would have been obvious to one having ordinary skill in the art at the time the invention was made to adjust the thickness of the overcoat layer to provide a thickness that is sufficient to provide a hydrophilic property while preventing organic substances from being adhered to the hydrophilic member, because it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. ***In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).** In addition, Komatsu discloses an overcoat layer of SiO_2 and further discloses that the layer may have a thickness within the range of 15 to 100 nm (column 3, lines 1-12 and column 4, line 54). It would have been obvious to one having ordinary skill in the art at the time the invention was made to select an overcoat layer thickness within the range of 15 to 100 nm, as disclosed by Komatsu, because this thickness is sufficient to provide a hydrophilic property while preventing organic substances from being adhered to the hydrophilic member.

Regarding claims 7 and 12, Tada discloses an alkali-shut-off undercoat film of SiO_2 disposed between the surface of the substrate and the photocatalytic layer (column 2, lines 16-22 and column 3, lines 14-17).

Regarding claim 9, Tada discloses that the substrate may be soda lime silicate glass (column 13, lines 62-67).

Regarding claim 10, Tada does not disclose using the hydrophilic member as a mirror, but Komatsu discloses using the hydrophilic member as a mirror by placing a thin metal film between the substrate and the photocatalytic layer (column 8, lines 6-17 and Figure 10). It would have been obvious to one having ordinary skill in the art at the time the invention was made to place a thin metal film between the substrate and the photocatalytic layer, as disclosed by Komatsu, because the article could then be used as an anti-fogging hydrophilic mirror.

3. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tada in view of Komatsu as applied to claims 1, 3-7, 9-10 and 12-20 above, and further in view of US Patent No. 5,605,609 to Ando et al. (hereinafter referred to as Ando).

Tada discloses that the alkali barrier undercoat film may be a monocomponent or a multicomponent composition containing silicon oxide (column 3, lines 14-17), but fails to mention the inclusion of tin oxide. Ando discloses an alkali barrier oxide film comprising silicon and tin (column 10, lines 58-67 and column 11, lines 1-12). It would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute an alkali barrier oxide film comprising silicon and tin, as disclosed by Ando, for the alkali barrier film of Tada, because it is functionally equivalent to the alkali barrier films disclosed by Tada.

(11) Response to Argument

The appellant asserts "It is conceivable that the reason (for post-washing contact angle with water of less than 10°) is because super-hydrophilic properties are present after washing since, from the aspect of surface polarity, tin oxide and silicon oxide have opposite polarities and bath soap is anionic." The examiner respectfully disagrees. Tada clearly discloses that the polarity of the silicon oxide layer alone is responsible for the low contact angle. Tada discloses that since the silicon oxide layer is nonpolar or has low polarity stains adhere less to the article and an increase of the contact angle is suppressed (paragraph bridging columns 10 and 11).

The appellant also asserts "the claimed invention is not disclosed or suggested by the applied references, whether considered singly or in combination, and achieves a significant advantage which is not achieved or suggested by the applied references, i.e., superior hydrophilic restoration properties (resistance to washing with soap), which results in improved, long term anti-fogging properties." The examiner respectfully disagrees. Tada clearly discloses that the silicon oxide layer improves the hydrophilic restoration properties and improves the long term anti-fogging properties. Tada discloses that since the silicon oxide layer is nonpolar or has low polarity the anti-fogging sustainability and hydrophilicty sustainability is improved (paragraph bridging columns 10 and 11).

The appellant asserts "it should be noted that the rutile structure of the tin oxide makes it possible to easily form a polycrystalline film having a surface of preferable irregularities, quite unlike the TiO_2 layer of Tada, in which appropriate denting and projecting is achieved only via special processing...or by being transferred through from the alkali shut-off layer." The appellant appears to be arguing that the prior art does not teach a rutile tin oxide layer and/or the

method of making the currently claimed article is different than the method used to make the prior art article. The examiner respectfully disagrees.

Tada (column 4, lines 50-54) and Komatsu (column 5, lines 16-40) both disclose that the photocatalytic layer may be deposited by CVD. Greenberg discloses that CVD deposited tin oxide layers have a rutile (cassiterite) structure. Therefore, it is the position of the examiner that the tin oxide layers taught by the applied prior art have a rutile structure. In response to appellant's argument that the method of making the currently claimed article is different than the method used to make the prior art article, the examiner contends that appellant's claims do not include the method of making the article.

The appellant asserts "persons of ordinary skill in the art would not consider it obvious to hypothetically modify Tada's antifogging articles by simply replacing the TiO_2 photocatalytic layer with a rutile layer of SnO_2 in light of the teachings of Komatsu, as proposed by the Examiner, because the disclosures of the two references are quite distinct and provide no motivation for the specific hypothetical combination." The examiner respectfully disagrees. Tada discloses that the photocatalyst layer may comprise TiO_2 (column 2, lines 48-54), but does not specifically disclose the use of SnO_2 as the photocatalyst layer. Komatsu discloses that a photocatalyst layer may comprise TiO_2 or SnO_2 because both possess photocatalytic activity (column 2, lines 40-44). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use SnO_2 as the photocatalyst layer of Tada, because it is functionally equivalent to TiO_2; i.e. both materials function as photocatalysts.

The appellant asserts "the applied references do not disclose the feature of claim 7 regarding the refractive indexes of the undercoat film, the substrate and the tin oxide layer." The

examiner respectfully disagrees. The prior art discloses an article comprising a glass substrate, an undercoat film of SiO_2, a SnO_2 layer, and an overcoat layer of SiO_2. Since SiO_2 has a refractive index between the refractive index of glass and SnO_2, the limitations of the claim are met.

Regarding claim 8, the appellant asserts "While Ando may disclose an undercoat film (such as a barrier layer) formed from a target having silicon oxide as a main component and another metal such as tin as a secondary component, Ando specifically forms the undercoat film as a "uniform layer" by a physical vapor deposition without breaking a vacuum." The appellant further asserts "This is contrary to the undercoat film formed as a layered body defined in claim 8, and further discussed in the present specification."

It is the position of the examiner that the undercoat film of claim 8 "is a layered body of tin oxide and silicon oxide." The claim is interpreted to include a layer comprising a compound comprising silicon oxide and tin oxide (a uniform layer). On page 8, lines 2-5, of the current specification, the appellant teaches that the undercoat film may comprise "a thin film with silicon oxide as the main component or a compound oxide film comprised of silicon and tin oxide, a film of silicon oxide which includes carbon, or layers of a film with tin oxide as the main components and a film with silicon oxide as the main component, or the like may be used" (underline added). In view of the specification it is clear that the claimed "layered body of tin oxide and silicon oxide" may comprise a compound oxide film comprised of silicon and tin oxide, as disclosed by Ando.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Andrew T Piziali
Examiner
Art Unit 1775

atp
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Conferees
Deborah Jones
Paul Thibodeau

CARRIER BLACKMAN AND ASSOCIATES
24101 NOVI ROAD
SUITE 100
NOVI, MI 48375